BEFORE THE

PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of Milwaukee Water Works, Milwaukee County, Wisconsin, for Authority to Increase Water Rates	**Docket 3720-WR-108**

Direct Testimony of Philip Q Hanser

1. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. My name is Philip Q Hanser. My business address is 44 Brattle Street, Cambridge, MA 02138.

Q. What is your occupation?

A. I am a consultant in the field of public utility regulation and a Principal of The Brattle Group, Inc. The Brattle Group is an economic and management consulting firm with offices in Cambridge, Massachusetts, Washington, D.C., San Francisco, California, New York City, London, Madrid and Rome.

Q. Please describe your educational background and experience.

A. I have been a Principal at The Brattle Group in its Cambridge office for over fifteen years. I have over thirty years of experience in the utility industry and

have testified previously before the Federal Energy Regulatory Commission on various rate issues. I have appeared before various state and Canadian utility/service commissions on rates matters. I also serve as an instructor in the Edison Electric Institute's Advanced Rates Course. During my employment at the Electric Power Research Institute, I served as a Project Manager, then Program Manager, of the Demand-Side Management Program where my research included the area of rate design. I also serve as a seminar leader at the Harvard Kennedy School. Colleagues at Brattle have participated in rate cases and other proceedings in the water sector on numerous occasions. I assisted in several of these projects, including in connection with a recent California-American Water rate case, a study on the use of alternative regulation in the water industry, and a California Water Service Company rate case. A more detailed statement of my qualifications and educational background is included as Ex.-MillerCoors-Hanser-1.

Q. Please provide a summary of your opinion.

A. I have reviewed the Milwaukee Water Works (MWW) cost of service study and rate design proposals filed on March 4, 2014,[1] and I have also reviewed the "live" spreadsheet versions filed as "Cost of Service Study – Follow Up #1 – Answer to #5 (Updated 5-14-14 Revenue Requirement-Cost of Service-Rate Model on May 14, 2014" (PSC REF#: 204429). I have also reviewed the further updates filed by MWW on May 30. The "live" spreadsheet that

[1] Cost of Service Study (PSC REF#s: 199899) and Rate Design Filing (PSC REF#: 199898).

corresponds to the most recent MWW filing was not provided to the parties until the evening of Saturday, May 31 and I have had only a very limited amount of time to review the detailed calculations and assumptions incorporated into this most recent version.[2]

MWW's overall cost of service methodology ("base-extra") is in line with good practice, but I have some concerns with individual elements of the calculations and how the methodology has been implemented. In particular, when the ratio between peak and average throughput is calculated, I am concerned that relying on a multi-year historical average may yield an under-allocation of costs to the peak-related costs relative to the allocation that would result from using system design parameters, a forecast, or a "maximum historical" value. I am also concerned that the methodology may not have been applied consistently to all cost components.

I have reviewed the rate design proposal,[3] which includes rate increases that are different for the different customer classes. Since the rate increases are different from the required overall average increase in the revenue requirement, I infer that the proposed rates for individual retail customer classes have been designed to balance rate stability or "tempering" and changes in cost allocations resulting from the cost of service study. While it is

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[2] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627).

[3] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tabs "12 Class Compare," "14 Urban Bill Impacts," "14 Suburban Bill Impacts," and "14 West Milwaukee Bill Impacts."

generally appropriate to temper rate increases in this way, I note that the result of this balancing is that, of the retail rate classes, urban residential customers would see the smallest increase and urban industrial customers would see the largest increase (in fact, MillerCoors is facing a 15.3% rate increase, well above the system average). It is common practice to balance rate stability and cost allocation in this way, although large increases in industrial rates can cause a significant impact on demand that could substantially reduce MWW revenues.

Q. How is the rest of your testimony structured?

A. In section 2, I briefly review MWW's proposed revenue requirements for 2014. In section 3, I discuss the cost of service study, and in section 4, I comment on the rate design proposal.

2. MWW REVENUE REQUIREMENTS FOR 2014

Q. What revenue requirement is being proposed for the 2014 test year?

A. MWW has proposed a 2014 test year total system revenue requirement of $90.3 million. This can be compared to forecast total system revenues at present rates for 2014 of $81.0 million and to approved total system revenue requirements for the 2010 test year of $79.8 million.[4]

[4] Final Decision, Docket 3720-WR-107 (PSC REF#: 144469), Appendix B, page 1.

Q. Why are the forecast revenues at present rates for 2014 higher than the authorized revenue requirements for 2010?

A. The forecast revenues for 2014 are higher than the revenues authorized for 2010 because rates increased by 3% in 2013, pursuant to a "simplified rate case."[5] Rates also increased by another 3% on June 1, 2014, as a result of a second simplified rate case.[6]

Q. How much have MWW rates increased since the last rate case?

A. My understanding is that the "going in" rates for this proceeding are 6% higher than the rates authorized in the last rate case because of the two 3% increases cited above.

Q. Why is the requested revenue requirement for 2014 greater than the authorized revenue requirement for 2010?

A. MWW's costs have seemingly increased, so the revenue requirement for 2014 is greater than the revenue requirement for 2010.

Q. What does the increase in costs imply for customer rates?

A. MWW is requesting a significant rate increase in this proceeding because, although rates have increased 6% since the last rate case, that increase has apparently not been sufficient for regulated revenues to keep pace with increases in the revenue requirement (the revenue required to cover MWW's

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[5] Final Decision (signed and served 5/9/2013), Docket 3720-WQ-103 (PSC REF#: 184601).

[6] Application for a Simplified Rate Case effective 6/1/2014, Docket 3720-WQ-104 (PSC REF#: 201525).

costs, including costs such as Payments in Lieu of Taxes (PILOT)). As a result, rates must apparently rise by 11.4% on average in order for MWW to recover its proposed revenue requirement for 2014.[7]

Q. Is the 11.4% increase that MWW is requesting the same as the increase that MWW requested when it originally filed its rate increase request in this docket?

A. No. In its March 2014 application, MWW proposed a system average rate increase of 11.8%. Subsequently that request was revised down by 3% because MWW separately filed for—and received—a 3% rate increase in a parallel proceeding. As a result of this change to the "going in" rates (and other smaller changes), the new requested increase as of MWW's May 14 filing was 8.3%.[8] On May 30, 2014, MWW filed a further update, requesting a system average increase of 11.4%.

Q. Why did the requested increase move from 8.3% to 11.4% between May 14 and May 30?

A. The cover letter filed by MWW suggested that the increase is due to an increase in the requested rate of return on rate base because of the recent harsh winter and the PSC encouraging MWW to invest in the utility's infrastructure.

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[7] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "12 Class Compare", row 127.

[8] Live Cost of Service Study spreadsheet (PSC REF#: 204429), tab "12 Class Compare", cell L127.

Q. What is the connection between the harshness of the winter and the required rate of return on investment?

A. None, to my knowledge.

Q. What is the connection between the need to invest in infrastructure and the required rate of return on investment?

A. I am not aware of any connection.

Q. If additional infrastructure investment is required, what are the implications for the cost of service?

A. Additional investment would mean that the rate base would increase, with consequently larger depreciation and return elements in the cost of service.

Q. Is MWW proposing to increase investment?

A. No. The proposed test year rate base in the May 30, 2014 filing is $336,130,621.[9] The proposed test year rate base in the May 14, 2014 filing was exactly the same.[10]

Q. Is the 11.4% increase in average rates reasonable?

A. I have no opinion as to whether the overall average rate increase is reasonable. I do, however, have specific concerns about the requested amounts for PILOT, mains replacement and meters.

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[9] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "2 NIRB", cell J18.

[10] Live Cost of Service Study spreadsheet (PSC REF#: 204429), tab "2 NIRB", cell J18.

Q. What is your concern with respect to MWW's PILOT?

A. I understand MWW's requested revenue requirement to include $12.8 million of PILOT.[11] I note that PSC Staff recently prepared a report expressing some concern at the level of PILOT payments by municipal water utilities, and highlighting that the level of PILOT payments is significantly greater than the level of the gross receipts tax paid by investor-owned water utilities.[12] MWW has requested PILOT of approximately 14.1% of revenue requirements, whereas a gross receipts tax would be approximately 3%, and some municipally-owned water utilities in Wisconsin pay no PILOT whatsoever.[13]

Q. What is your concern with respect to mains replacement?

A. MWW filed a short report in this docket relating to mains replacement activity.[14] Mains replacement, like other investing activity, has a large impact on utility cash flows, but a relatively smaller impact on the revenue requirement (because the cost of investment is recovered over a relatively long economic life). While I am not an engineer, I have some concerns about the replacement program. First, no larger transmission mains are being replaced at all. Second, the rate at which distribution mains are being replaced is (and has been for many years) significantly below the "rule of

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[11] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "Attach9," cell H43 (Tax Equivalent Payable for the Current Year, for Test Year 2014).

[12] Investigation into Municipal Utility Payment in Lieu of Taxes (PILOT), Staff Report, Docket 5-GF-215, January 30, 2013.

[13] *Ibid*., p. 7.

[14] Water Main Replacement Report (PSC REF#: 199900).

thumb" replacement rate of 20 miles per year cited by MWW. MWW's replacement rate is too low to be sustainable even for the oldest and longest-lasting vintage of pipe (which makes up only 43% of the MWW total). Third, according to the report, MWW's replacement activity has been and will continue to be constrained by the availability of funds. This is particularly concerning in light of the high PILOT payments and the possibility that MWW may make additional general fund payments.

Q. Please explain your concern with respect to meter replacement.

A. Unlike the case for transmission and distribution mains, MWW appears to be replacing meters at a rate much greater than would be expected on the basis of the economic life. MWW's depreciation expense for meters is 5.5%,[15] corresponding to an economic life of less than 20 years. Yet the replacement rate appears to be much higher than even the already high rate implied by the 20 year economic life. MWW is proposing to retire 9.0% of its meter stock (by value) in the test year, and it is proposing to add 15.2% to the gross meter plant balance (for a net increase of 6.2%).

[15] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "Attach12", cell I63.

3. MWW'S COST OF SERVICE STUDY

Q. What is the purpose of a cost of service study?

A. The ultimate purpose is to allocate the cost of service (i.e., the revenue requirement) across the various customer classes.

Q. How is this cost allocation usually done?

A. The cost allocation part of a cost of service study typically consists of three steps. First, each element of utility cost is allocated to different "cost functions"; second, for each customer class, an estimate is made of the class usage of the different cost functions; in the third step, the results of step one and step two are multiplied together to calculate a cost of service for each class.

Q. What cost functions does MWW employ?

A. MWW allocates its costs to a range of cost functions, including "system," "distribution," "storage," and "customer" costs. System and distribution costs are further divided between "base," "max day" and "max hour." Storage costs are allocated to the max hour cost function.

Q. What are "system" and "distribution" cost functions?

A. My understanding is that the "system" cost function represents activities related to obtaining water supplies. In contrast, the "distribution" cost function represents activities related to transporting the water to customers' premises.

Transmission mains are allocated to the system cost function whereas distribution mains are allocated to the distribution cost function.

Q. What do you mean by “base,” “max day” and “max hour”?

A. "Base” costs are those which are associated with providing water to customers year round, irrespective of the time of year and whether system demand is high or low. “Max day” represents costs which are incurred in order to provide additional capacity, over and above the base consumption, to supply customers with additional water on the peak day (i.e., the highest-use day of the year). Similarly, “max hour” represents costs associated with additional capacity that can supply even larger amounts of water to customers in the peak hour (i.e., the highest-use hour of the year) relative to demand across the peak day.

Q. How are system and distribution costs allocated between base, max day and max hour cost functions?

A. Costs are allocated between base, max day and max hour in proportion to the average hourly throughput in the year, the average hourly throughput in the maximum day and maximum hour throughput. This allocation is expressed as a ratio. For example, MWW allocates transmission mains expense according to a ratio of 65:25:10,[16] where:

- 65 = average hourly throughput across the year
- 25 = additional average hourly throughput across the peak day and
- 10 = additional throughput in the peak hour.

The mathematical relationship between the peak and base flow rates and the cost allocation ratios is shown in Ex.-MillerCoors-Hanser-2.

The expense for distribution mains is allocated to base and max hour only at a ratio of 65:35[17] since no distribution mains expense is allocated to max day.

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[16] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "4 System Demand Ratios", cells F50-52.

[17] *Ibid*., cells H23, H26.

Q. Why are none of the depreciation expenses for distribution mains allocated to the max day cost function?

A. I do not know. If some of the expense for transmission mains is allocated to max day, I am surprised that no expense for distribution mains is allocated to this function. Although we made a request for an explanation,[18] we have not received one.

Q. What is the relationship between the allocation ratios you mentioned above and system demand ratios?

A. System demand ratios are usually expressed as the ratio of peak day to average daily throughput, or peak hour to average daily throughput. These system demand ratios are just a different way of expressing the cost allocation ratios I discussed above: the average and peak flows which the ratios represent are the same, but the mathematical form of the ratio is different. Ex.-MillerCoors-Hanser-2 shows how the 65:25:10 cost allocation ratio is calculated from MWW's system demand ratios.

[18] MWW response to MillerCoors first set of discovery requests (PSC REF#: 204431), p. 3. The MWW response to Interrogatory No. 2 regarding utility financed distribution mains states, "This method used to allocate utility financed distribution main costs is the same as that used in the cost of service study authorized by the Public Service Commission of Wisconsin in the 2009 Milwaukee Water Works rate case (Docket 3720-WR-107)."

Q. What system demand ratios is MWW proposing?

A. MWW has proposed peak day ratios of 1.38:1 (peak day to average day) and 1.54:1 (peak hour to average day).[19] These ratios form the basis for allocating expenses across the various cost functions. Customers with high ratios place a larger burden on the system in comparison to those with lower ratios. This is because as their peak demand ratios differ from average demand ratios, facilities must be constructed to meet the additional demands which the higher ratio represents.

Q. What is the significance of the system demand ratios?

A. As I explained above, the system demand ratios are used to allocate total costs to the various cost functions. It is important to allocate costs in this way because different usage patterns place different demands on the system. For example, a customer that uses water only in the fall and only at night puts a very different demand on the system compared to a customer that uses exactly the same quantity of water but uses it during the day in mid-summer. In effect, because the first customer uses water only at times when other customers are not using the water, that customer can be accommodated at very low cost. No pipeline capacity needs to be dedicated to that customer because in the fall and at night there is plenty of spare capacity. In contrast, the second customer's demand can only be satisfied if pipeline capacity is

[19] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "4 System Demand Ratios," cells S25 and S37, respectively.

dedicated to that customer, since the usage coincides with other users of the system, and occurs at times when there is no spare capacity. Economic efficiency requires that customers' tariffs should properly reflect the costs they impose on the system. It is therefore important that an appropriate amount of total cost is allocated to "peak" usage, and the "peak extra" methodology is one way of doing that. System demand ratios are important parameters for this allocation.

Q. What makes you think that the system demand ratios used in the cost of service study may not be optimal?

A. My understanding is that the system demand ratios of 1.38 and 1.54 are six-year averages of actual throughput. As a result, costs are being allocated on the basis of historical usage patterns. One reason to be concerned with cost allocation is to ensure that utility customers face efficient prices so that customers can make efficient consumption decisions. For these purposes, the relevant cost should be forward-looking. If providing additional peak capacity is expensive and consumption patterns are changing over time, a better price signal will come from allocating costs in relation to a *forecast* of peak usage. Furthermore, since capacity expansions must be planned in advance of actual usage, the relevant measure is a forecast of peak usage under extreme conditions (such as hot dry weather) rather than a forecast of peak usage under average conditions. I note that there have been several years

with peak ratios (i.e., actual maximum to average day usage ratios) much higher than the six-year averages that MWW is proposing to use.[20]

Q. What would the impact be if the cost of service study used system design parameters or a forecast of demand ratios instead of a historical average?

A. System design parameters allow for a significantly larger peak to average ratio. Robert Planton, testifying on behalf of the Wholesale Intervenors in the last rate case, stated that,

> standard engineering practice relies upon controlling design parameters when evaluating a system's water supply capacity needs. Controlling design parameters are established based upon sound water supply engineering principles and estimate of current and future system maximum day and average day demands. A water system is built to meet these controlling design parameters, and water system costs should be based upon these design parameters. This is consistent with cost-based ratemaking. As stated in [his] initial rebuttal testimony, it [was his] opinion that MWW's controlling design parameter for its water supply capacity is

[20] Exhibits 2.35-2.39 – Patrick Planton, Docket 3720-WR-107 (PSC REF#s: 134999-135003).

a maximum day ratio of not less than 1.6 times its average daily pumpage.[21]

The equivalent type of ratio (i.e., based on controlling design parameters) assumed for max hour to average hour is 1.9.[22]

As a result, relatively more cost would be allocated to max day and max hour cost functions, and relatively less cost would be allocated to base. Other things equal, this would result in a smaller cost of service for customers with flat consumption and relatively larger cost of service for customers with "peaky" consumption.

Q. Are you able to quantify the impact this would have on cost of service for individual customer classes?

A. No. Using the live cost of service study, I was able to approximate the impact of switching to system design ratios on the allocation of total cost to cost functions. As expected, more costs were allocated to max day and max hour. However, the Excel model did not behave as expected. Changing the demand ratios not only changed the allocation of costs, it also changed the total cost of service (total revenue requirement). The fact that the model showed an increased total cost of service in response to adjusting the demand ratios leads me to suspect that there may be errors in the model. As

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[21] Transcript Volume 1 – Prefiled Testimony, Docket 3720-WR-107 (PSC REF#: 138196), SR2.78.

[22] Transcript Volume 1 – Prefiled Testimony, Docket 3720-WR-107 (PSC REF#: 138196), SD12.21.

a result, I was not able to calculate cost of service by customer class using adjusted demand ratios. I reserve the right to supplement my testimony if MWW supplies a fully functioning Excel model or clarifies how to make adjustments within the model it previously provided.

Q. Is it important that the cost of service be correctly allocated to individual customer classes?

A. Allocation of costs in this way is by no means an exact science: there is no one correct answer. However, standard regulatory practice is to give careful consideration to obtaining a good cost allocation, because a poor cost allocation can result in economic inefficiency. If providing peak capacity is expensive, but due to poor cost allocation the cost of peak capacity is loaded onto year-round consumption, there will be relatively more peak consumption than there would have been with more efficient prices. The additional peak capacity required will make the system more expensive for all users. Furthermore, because costs are being loaded onto year-round consumption, rates for industrial customers (which tend to have both relatively flat consumption and relatively high price sensitivity) would be unfavorable relative to an alternative situation where prices were more efficient.

Q. Do you have other concerns with the cost of service study?

A. Yes. In addition to the allocation issue related to depreciation that I discussed above, I am also concerned that the cost of service study allocates only *gross*

plant across cost functions,[23] but it does not allocate net plant or net investment in rate base. Net investment in rate base is allocated across cost functions in proportion to allocations of gross plant, rather than allocations of net plant, which would be more precise. As a result, the cost of plant in service would not be allocated accurately to the different cost functions, and hence to the different customer classes.

More broadly, I am concerned that the cost of service model itself is overly complex and, while a "live" version has been provided, I was not able to use the live version to test alternative assumptions and inputs.

4. MILWAUKEE WATER WORKS' RATE DESIGN PROPOSAL

Q. How are the results of the cost of service study reflected in rates?

A. I explained above that *average* rates need to increase by about 11.4% in order for MWW to recover its cost of service in 2014.

Q. Has MWW proposed to increase all rates by 11.4%?

A. No. A range of rate increases (and some decreases) has been proposed. I understand that Wisconsin Public Service Commission policy is that the rates for wholesale customer classes should be set to recover the cost of service

[23] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627): allocations across cost functions in tabs "5 Alloc of Financed Plant" (which feeds into tab "5A Alloc of Total Plant"), "6A Alloc of Depr" are based on tab "3 Financed Plant," which takes the opening balance in each plant account from tab "Attach11." These balances in tab "Attach11" represent gross plant rather than net plant balances.

for these customers. Rates for the retail customer classes, as a group, are proposed to recover 100% of the retail cost of service, but different rate increases are proposed for the different retail customer classes. For example, the urban residential rate increase is proposed to be 5.3%, whereas the urban industrial rate increase is proposed to be 13.4%.[24] The impact on urban industrial bills (for 8" meter size) is proposed to be 15.3%.[25]

Q. You outlined some concerns with the cost of service study. What do those concerns imply for the rate design proposals?

A. I suggested above that the cost of service study may be allocating too much cost to base and too little cost to max day and max hour. If the cost of service study were adjusted as I suggested, it may be that relatively more cost would be allocated to max day and max hour, and, in consequence, the cost of service for the industrial class would be reduced (because the industrial class makes relatively little use of the max day and max hour function). As I explained above, I am unable to quantify the reduction because the live spreadsheet provided to me did not function correctly.

Q. Does this complete your direct testimony?

A. Yes.

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[24] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "12 Class Compare," cells L15 and L17, respectively.

[25] Live Revenue Requirement-Cost of Service-Rate Model dated 5/30/14 and served on parties on 5/31/14 (PSC REF#: 205627), tab "14 Urban Bill Impacts," cells I20 and I12 (residential range) and cell I44 (industrial).